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MINISTRY OF PUBLIC BUILDING AND WORKS

The Assessment of New Building Products

Report of the Committee on Agrément

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The Committee on Agrément

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	Mr. A. B. Hume*—Ministry of Public Building and Works.
	Dr. T. W. Parker, F.R.I.C.—Deputy Director, Building Research Station.
SECRETARY	Mr. T. W. Hall—Ministry of Public Building and Works.
TECHNICAL SECRETARY	Mr. R. B. White, A.R.I.B.A.—Building Research Station.

* Mr. Carstairs took the place of Mr. Hume on 4th January, 1965.

31st March, 1965

To: Rt. Hon. Charles Pannell, M.P.,
Minister of Public Building and Works,
Lambeth Bridge House,
London, S.E.1

Sir,

We were appointed by your predecessor to examine the need in Britain for arrangements, like those of the French Agrément System, to test new building methods and materials and to certify those which reached an acceptable standard. We have concluded that there is a pressing need for such arrangements if prompt advantage is to be taken of technical innovations.

From the evidence we have received we are confident that most bodies associated with the industry share this view. Those who produce innovations are rightly concerned that their use will not be thwarted by too rigid an adherence to accepted practice. Those who are to use them need authoritative assurance that they will meet the claims made for them.

But the establishment of a certifying authority on the lines we recommend will not in itself achieve this aim. In many cases early amendments to Building Regulations will also be required if the adoption of certified innovations is to be encouraged. Both stages are essential, and we recommend strongly that they should be considered as an integral whole.

We take this opportunity of expressing our appreciation of the excellent work of our Secretaries in handling a large and complex mass of often difficult and technical material.

We now present our report.

D. E. E. GIBSON (*Chairman*)
L. A. BAYMAN
P. L. COCKE
G. GOULDEN
W. K. LAING
T. SIBTHORP

T. W. HALL (*Secretary*)
R. B. WHITE (*Technical Secretary*)

The Assessment of New Building Products

I. INTRODUCTION

1. We were appointed on 3rd February, 1964, with the following terms of reference : —

> " to examine the origin, purpose and operations of the French Agrément System ; to consider whether there is a need in the United Kingdom for arrangements for testing and proving materials, components and methods of building of a more formal nature than those which already exist, and, if so, to examine questions of organisation and finance ; to obtain the views of interested organsiations, particularly those in the building industry and the associated professions ; and to make recommendations."

2. In this connection it is fitting that we should record the initiative of the Royal Institute of British Architects in arranging a meeting on 22nd October, 1963, at which the French Agrément System was first publicly discussed in this country. The then Minister of Public Building and Works took part in the meeting and the appointment of our Committee is a direct result.

3. At the outset we decided that our report should fall logically into three parts—a study of the French Agrément System and its relevance in British conditions, an assessment of the need for comparable arrangements here and, if appropriate, our recommendations on the way in which those arrangements might be made. To assist us in our study of the French practice we approached M. G. Blachère, Director of the Centre Scientifique et Technique du Bâtiment. He was kind enough to arrange for M. P. Roger, head of the Service de l'Agrément to travel to London and give us a most clear and detailed account of the operation of the Agrément System. We are most grateful to them both for their help. We are grateful also to the large number of organisations, firms and individuals connected with every facet of the industry who submitted written and oral evidence. They are listed in Appendix A.

II. THE FRENCH AGRÉMENT SYSTEM

Its Origins and Purpose

4. The Agrément System owes its foundation to the responsibilities which architects and contractors carry under French law. In France the contractor and the architect are automatically held responsible for total or partial failure of the building for a period of ten years from the termination of the works. Moreover architects and contractors are required by law to insure themselves against risk. These requirements have made building insurance in France a very wide and complicated field. In order to satisfy themselves that designs, materials and methods of construction are likely to be satisfactory, French insurance companies make use of specialist advisory organisations known as Bureaux de Contrôle. For this purpose an authoritative assessment of new materials and methods is clearly of great advantage and avoids the duplication of tests on the same product by a number of different parties.

5. It was against this background that the French Government established the Service de l'Agrément as part of the Centre Scientifique et Technique du

Bâtiment (C.S.T.B.), the French equivalent of the Building Research Station, to examine and in suitable cases approve new materials, processes and forms of construction. Its primary object is to relieve users of the necessity of making detailed investigations of new products by publishing freely the best advice on them. The certificates it publishes are simply favourable technical appraisals. They are not intended as a substitute for French Standards, and they do not free the user of an approved product from the responsibility of complying with French building regulations. As a general rule Agréments are formally required only for large scale housing and educational projects using new methods and financed by the State. The products submitted for Agrément are broadly those suitable for projects of this type. The Service has not been called upon to test the more elaborate and expensive products such as air conditioning equipment.

6. The Agrément System has become widely esteemed both in France and in Western Europe as a whole. Similar systems have been introduced by the Netherlands, Portugal, Spain, Belgium and Italy, and these countries have banded together to form the European Union for Agrément, which aims to agree common standards and to secure general acceptance of Agrément certificates by all members.

Its Organisation and Operation

7. The Service de l'Agrément comprises a small body of professional and technical staff, relying for administrative services on the general facilities of the C.S.T.B. It is under the general supervision of a board representing Government and industrial interests, the Commission de l'Agrément. The Commission has in turn a network of specialist sub-committees, to which the staff of the Service submit all individual cases for scrutiny and approval. These sub-committees include architects, manufacturers, representatives of the Bureaux de Contrôle and other interested organisations. Agrément certificates are signed by the Director of the C.S.T.B., who takes full responsibility for all opinions expressed in them.

8. Agréments are issued only for non-traditional items. As the dividing line between traditional and non-traditional items is sometimes difficult to establish the specialist sub-committees may be called in to advise, and to recommend the issue of a " declaration of traditional status " to well established products. With the exception of decorations and furnishings the Service is bound to consider any application in respect of a non-traditional material or process. Between 120 and 140 Agréments are given each year, about one-third of the annual number of applications.

9. An Agrément is a comprehensive document, not only detailing the performance and the physical properties of the product, but also giving an indication of its method of manufacture and setting out the situations in which it may be used and the methods by which it should be applied. It is based on exhaustive details submitted by the manufacturer, which the Service then assesses with the help of observations on the site and tests in the laboratory.

10. The Agrément certificate is published by the C.S.T.B. and is available to anyone who cares to purchase a copy. The manufacturer of the product concerned can—and many do—purchase bulk supplies of copies for advertising purposes. Thus the certificates form an important source of technical information for the building industry in France.

11. Agréments are given a maximum validity of three years. They are then reviewed to see whether experience in use has proved satisfactory and whether they still measure up to current requirements. If all is well, an Agrément may be renewed for further periods of three years until it is generally accepted. It is then given a declaration of traditional status.

12. Sometimes an Agrément may be given for a period shorter than three years. This would happen if, for example, the Service wished to check that the average quality of the product over a period of time was acceptable, or that firms were able to use it satisfactorily. Alternatively, it might be that, while the product itself was well tried, the method or substances used in applying it were novel and needed to be carefully reviewed.

13. The Agrément System is financed in part by contributions from the French Government and in part by fees from applicants. Half the fee is paid on initial application and the remainder at the time the test report is submitted for approval.

III. THE NEED FOR CENTRAL TESTING AND CERTIFICATION OF INNOVATIONS IN BRITAIN

Initial Enquiries

14. In order to obtain as general a consensus of opinion as possible we announced in the national and technical press our willingness to receive evidence on the need for a British equivalent of Agrément. In addition we invited responsible bodies in the building and components industries and in the associated professions to submit their views to us. Of the replies which we received 75 were plainly in favour of and 27 against the idea of a central body which would certify that innovations reached an acceptable standard. As most of these replies were from professional bodies and trade associations with large memberships we think that we have obtained an accurate impression of the views generally held on this subject.

15. It is noteworthy that all the major organisations which submitted evidence were in favour of a certification system. Among them were the Royal Institute of British Architects, the Architectural Association, the Institutions of Civil and Structural Engineers, the local authority associations, the British Standards Institution, the National Federation of Building Trades Employers, the Institute of Builders, the National Council of Building Materials Producers and the Federation of British Industries. Those who saw no need for the introduction of a certification system were for the most part trade associations whose range of products was not subject to radical technological change and was already covered adequately by British Standards or Codes of Practice.

16. The reasons given in support of centralised certification reflected the wide range of interests covered in our enquiry. The one which occurred most frequently was the need for an authority which would be able to ensure that the use of certified materials and techniques was not impeded by a narrow interpretation of building regulations. It was generally agreed also that the institution of authoritative and impartial test reports would act as a valuable source of information on new developments for the professions and for contractors, and would aid the acceptance of innovations in this country and abroad. Some bodies suggested that these reports should include an assessment of their value for money. Others foresaw that, by measuring their products against impartially devised yardsticks, a certifying authority would encourage manufacturers to raise their standards and to devote more time to the development process. Industrial interests emphasised that the institution of an official certification scheme would be of great help in encouraging sales of building components abroad, particularly if British certificates could become interchangeable with those issued on the Continent. Those who commented on the scope of the scheme were agreed that it should apply only to new materials and techniques and to new uses of old materials, should grant interim certificates, complementary to British Standards and Codes of Practice, and should be voluntary rather than compulsory.

17. A few of those in favour of a certifying authority considered that it should carry out its own tests. The majority, however, were concerned that there should be no duplication of the testing work which is already being carried out by existing organisations. They thought that it should be possible for some or all of these bodies to adopt common procedures and equipment and share the load of testing between them under the general guidance and supervision of the certifying authority. A variant of this suggestion, put forward by one or two bodies, was that the authority should confine itself to considering evidence submitted by manufacturers on the basis of tests by independent laboratories.

18. Although most of those not in favour of a certification system were, as we have said, outside its likely sphere of activity, a few, while accepting the need for technical development and the wider use of new materials, objected on the grounds that the establishment of a new body would inevitably duplicate existing work and would merely increase the demand for scarce technical personnel. They said that such a body would become over-conscious of the need to show independence and reliability and that it would in this way delay rather than encourage technical progress.

The Need for Centralised Certification

19. The general consensus of this evidence is that, where no relevant British Standards or Codes or Practice exist, there is a need for the authoritative and independent assessment of new materials and techniques. From our study of the evidence submitted to us and from our individual experience of the problems involved we agree with this view. In our opinion the spread of technical development in building is at present being delayed by three main factors—first, the difficulty that builders and designers find in keeping abreast of new products and techniques, and their reluctance to use or specify any

that are not well established or have not been officially approved; second, the general and understandable demand for clear compliance with Building Regulations, and third, the disinclination of both public and private clients to adopt any new and relatively untried development. A central certifying authority could only hope to make any impression on the third of these factors when it had established its reputation, but it could quickly do much to counteract the effect of the first two. We therefore recommend the establishment of a central certifying authority to provide reliable and independent assessments of new products and techniques. If the authority's work is to be generally accepted it will have to be clear that certified products or techniques satisfy or are deemed to satisfy any relevant Building Regulations. We consider this point in paragraph 36.

Scope of the Certifying Authority

20. It is at present difficult for two types of innovation to reach general acceptance. These are, first, new uses for a product which were not foreseen when the British Standard applying to that product was compiled and, second, new developments for which no minimum standards exist and, indeed, for which no standards can be considered until substantial experience of their manufacture and use is available. In most cases the difficulty of acceptance is a temporary problem which begins with the release of the innovation for general use and ends with the publication of a Standard or Code of Practice, although some types of proprietary articles unique in their field may not under present arrangements be the subject of a British Standard. Three conclusions follow from this. First, the certifying authority should concern itself only with new products, systems and techniques and with new uses of established ones. It should not deal, for example, with the architectural design of complete houses but only with any innovations in their method of construction. In this way the authority would complement the work of the British Standards Institution, with which it would clearly need to work in close co-operation. Second, because there will be no generally accepted standards against which to measure these innovations, the authority's certificates will have to contain a detailed assessment of their relevant characteristics, methods of application and so on. Third, the certificates will be subject to review from time to time, partly because they will be superseded in due course by Standards and Codes of Practice and partly because the authority will wish, in any case, to keep the innovations it certifies under review.

21. We considered with a good deal of sympathy the suggestion that certificates should include an assessment of a product's value for money. Although we can readily see how useful this information would be to potential users, we have come to the conclusion that it would be neither easy nor appropriate to include it within the framework of a certification system. If the system is to be a success there will have to be complete confidence and candour between individual manufacturers and the testing organisation. This would be difficult to achieve, involving as it must the disclosure of detailed information on the product, if it is to be linked with a critical appraisal of the product's cost. Moreover, the assessment of value for money implies of necessity a comparison with other similar products. It would be out of place in a system which should aim to assess each product individually and on its own merits.

The Need for Centralised Testing

22. We were at first attracted by the notion of a comprehensive certifying and testing authority. This offers the promise of greater organisational efficiency than two complementary bodies can hope to achieve. If those responsible for certification and for testing are concentrated in one organisation, and perhaps also in one place, they can work more closely together and differences of opinion between the two will be less likely to occur. It would however be out of the question to establish a new testing organisation under the control of the certifying authority, as this would inevitably duplicate existing facilities and increase demands for scarce scientific staff. Such an organisation could be established only at a substantial cost and with considerable delay to the whole scheme. In any case the building and building materials industries are already served by many testing facilities. Many of the larger firms have laboratories to aid their research and development work, and the Industrial Research Associations and the private testing laboratories are also active in this field. The Building Research Station and Forest Products Research Laboratory carry out independent tests for manufacturers at the pre-production stage, and the British Standards Institution tests or arranges for tests of articles going into production. It should therefore be possible to arrange that the actual work of testing is carried out by existing organisations.

23. We conclude therefore that, unless both certification and testing could be carried out by an existing body which already had a comprehensive testing organisation, it would be better for them to be separate and for testing to be based on existing facilities expanded as necessary. In this case, however, it would be essential to ensure that tests for similar products were carried out on a comparable basis.

Should Certification be Compulsory ?

24. We see no reason to make the issue of a certificate by the authority compulsory for all innovations. Many may be of so minor a nature or so closely allied to recognised practice that certification would be unnecessary. Moreover, the load of assessment which would automatically fall to the authority on its inception would prevent it from keeping pace with further development. If the authority is to function properly it must produce its assessment with the least possible delay. It must, therefore, be free to gear its load of assessment to its capacity and to select the types of product and technique which most merit study. To ensure impartiality it should, however, be bound to consider any innovation of a type that had previously been certified. The voluntary use of its facilities need not detract from its effectiveness. Users would probably be eager to specify products and techniques which had received a certificate. Where they were prepared to accept innovations which had not done so, the cachet of a certificate would be unnecessary.

Should Certification be Published ?

25. Certificates should be published, so that knowledge of reliable innovations spreads throughout the industry and the professions. These certificates should be issued only to successful applicants, and the knowledge of failure

should be restricted to the applicant and the approval authority. In the context of publication one point calls for comment. The French certificates include a reasonably detailed account of manufacturing processes, giving, for example, the ingredients of a product but omitting the proportions in which these ingredients are added. We have heard differing views on the inclusion of manufacturing details in a British certificate. Some argue that manufacturers would be unwilling to release these details for publication, others that the information concerned is no more than that required for patent registration and that the efficient manufacturer will be neither perturbed nor damaged by its disclosure. This is really a point of detail which the authority will have to work out for itself. We should record however, that in principle we favour as full a disclosure as possible. If this proves a major stumbling-block to the success of the system, we should support an arrangement under which some manufacturing details remained confidential between the manufacturer and the authority. Some information would however have to be published. Users would have to be sufficiently informed about the process of manufacture to be able to judge, for example, the risk of delamination in particular types of product. Where information is withheld provision would have to be made for the authority to take up any complaint that an item was below the expectations of the certificate, as the dissatisfied user would have no yardstick against which to carry out his own tests.

The Composition of a Certificate

26. Bearing in mind that the function of a certification scheme is to lend greater certainty to the process of innovation than would obtain without it, and also having regard to the French model, it is possible to visualise the shape a certificate might take.

27. First there would obviously have to be an informative factual description of the product. This description would first define it in terms of its chemical constitution, physical appearance, surface finish and so on. It would then describe its purpose, for example, a walling unit or a floor surface, and the installation method. These latter descriptions would be particularly necessary in the case of well-known materials assembled by a non-traditional method or put to a non-traditional use. The aim would be to give the user the facts about the product that would enable him to foresee any particular difficulties that might arise in using it, particularly in conjunction with other products.

28. The second section could well describe the manufacturing process in whatever detail the authority thinks appropriate. It would also be wise to indicate in this section the type of quality control imposed in the manufacturing process and the resulting variations in properties and dimensions.

29. After this broad description of the product and of its manufacture, the third section of the certificate would consist of a complete list of all the relevant physical, chemical and mechanical properties of the product. The bulk of the laboratory investigations would be reported here. In addition, tests of the performance of the product assembled in an actual structure (or a carefully planned mock-up) would be reported in this section. This list

would be exhaustive in relation to the properties of the product that are relevant to its use in building and a list of this nature would enable the basic properties of similar products to be adequately compared.

30. The fourth section would deal with the site experience thus far available for the product. The circumstances of use would need to be accurately defined, all the relevant factors—exposure, usage, loading, practical difficulties in installation, and so on—being noted. However, for the architect and builder, who would be the main users of certificates, it would be necessary to put flesh and bones on the factual details so far given.

31. The fifth section of the certificate would form therefore the assessment of the product, in which site experience would be drawn on and in which there would be a commentary on the likely performance of the product in use in a building. This section would draw together, after expert study, all the preceding sections in the form of a commentary on the likely performance of the product in a building, discussing behaviour in use, durability, maintenance and so on. All this would be in terms of the product used in the manner described in the first section of the report. A final section would give any reservations thought necessary on the use of the product; for example, it might be wise to restrict its use to buildings of a certain height or to buildings with less than a certain degree of exposure to the weather or to situations away from the coast.

32. Clearly the last two sections would be much the most important and they would have to be drafted in positive unequivocal terms so as to be of the greatest help to the reader. Equally they would be the most difficult to draft and would require the greatest experience of building and of the relative importance of the various properties.

The Likely Demand for Certificates

33. It is not easy to estimate with any certainty the likely demand for certificates. The authority may well be faced with an initial rush of applications, many, we imagine, from manufacturers whose products are already well established. The genuine innovations will have to be sifted out and dealt with in whatever order and at whatever rate seem best to the authority. The only indications of the continuing demand we can obtain—the numbers of applications for the Building Research Station's Special Investigation Reports, innovations submitted to the Building Centre, and Agréments issued—suggest a minimum annual number of 100 to 150 applications. If, however, the system is adopted with the enthusiasm which our evidence suggests that number should be far exceeded.

Review of Certificates

34. Certificates should initially be valid for a limited period to be determined by the authority. If a manufacturer wished to extend the validity of a certificate, he would have to give notice six months before the end of the period. The authority would then make an enquiry into experience of the product's performance in use. The cost of doing so would be part of the charge for the renewal of the certificate. This enquiry would uncover any

difficulties that had arisen from departures from the prescribed method of assembly, and the results would be taken into account in deciding on a renewal. If this procedure is clearly understood it should form an incentive for the manufacturer to give the necessary technical help to users to ensure the correct procedures for assembly.

Relation Between Certificates and British Standards

35. As we have said before, certificates are precursors of British Standards. They should in no way replace them or impede their preparation. We hope that the award of certificates to individual products will in fact lead naturally to the formulation of general British Standards and we propose that the authority and the British Standards Institution should agree where possible on time limits after which certificates will not be renewed but will be replaced by British Standards.

Relation Between Certificates and Building Regulations

36. It will be clear from the description in paragraphs 26 to 32 that certificates will not in themselves guarantee, or carry any exemption from, compliance with Building Regulations, though they will obviously be prepared with the requirements of Building Regulations in mind. They will state merely that a certain product or technique can be relied upon to perform a certain task under certain conditions if applied in a certain way. Some products or techniques may not be affected by Building Regulations. Others may have no difficulty in demonstrating that they comply with them. For both these categories a certificate should be sufficient to encourage their general use and ensure their acceptance by local authorities. Where, however, Building Regulations take the form of functional requirements or performance standards, it may be difficult for the manufacturer or potential user, armed merely with a certificate, to convince local authorities that an innovation complies with the Regulations. In these cases the general use of an innovation can only be facilitated if it is sanctioned by inclusion in an appropriate "deemed to satisfy" clause of Building Regulations. Responsibility for the amendment of the Regulations in this way must, of course, rest with the Ministry of Public Building and Works (and in Scotland with the Scottish Development Department). We hope, however, that these Departments and the authority will be able in large measure to work together and that, where the Departments think it appropriate, the issue of a "deemed to satisfy" clause will follow on the heels of a certificate.

IV. THE ORGANISATION AND FINANCING OF THE CERTIFICATION SYSTEM

ORGANISATION

Further Enquiries

37. Having accepted the need for a certifying authority, and having agreed that its testing should be carried out by existing facilities, we proceeded to consider how the authority should operate. From our previous enquiries it seemed that any one of five bodies might appropriately be made responsible for the authority—the Building Research Station, the British Standards Insti-

tution, the National Building Agency, the Ministry of Public Building and Works or a new independent authority. We invited seven organisations, representing the main sectors of interest, to advise us on this and related points. They were the Association of Municipal Corporations, the British Standards Institution, the Federation of British Industries, the National Building Agency, the National Council of Building Material Producers, the National Federation of Building Trades Employers and the Royal Institute of British Architects. We invited them to consider

(i) which of the five bodies mentioned above could most suitably undertake the function of certification ;

(ii) whether the chosen body should have associated with it an advisory committee, and

(iii) how responsibilities should be divided between the testing body and the certifying authority.

38. *(i) Responsibility for the Authority*

On the first of these points we found a considerable variety of views. Taking our discussions as a whole, however, the following principles emerged : —

(a) that certificates would do little to spread the ready acceptance of many innovations unless they were commended to local authorities by the parallel issue of a " deemed to satisfy " clause under Building Regulations ;

(b) that the form or organisation chosen should in an appropriate way reflect the necessary link between certificates and British Standards ;

(c) that the authority should be clearly impartial, that it should be judicial in its approach and that it should not be closely linked with any body having particular interests in the field of industrialised building ;

(d) that the authority should be speedy in operation.

(ii) Need for an Advisory Committee

On this point there was general agreement that the authority should include a board representative of the various interests concerned, which should oversee the general operation of the authority, determine priorities for its work and, perhaps, consider appeals in individual cases.

(iii) Division of Responsibility between the Certifying and Testing Bodies

Here we found wide agreement that the Building Research Station should be responsible for the organisation and formulation of testing, though some witnesses thought that the provision of experimental data could very well be carried out by a range of approved test houses.

Who Should Run the Authority?

39. It would be in many ways simple and attractive if the authority were attached to an existing body. However, we realised early in our investigations that none of the existing bodies was ideally suited for the task, and the evidence we received, though not pointing clearly in any particular direction, lit up their relative advantages and disadvantages. The following paragraphs set out our conclusions on the various bodies.

Ministry of Public Building and Works

40. We accept the view, put by some potential users, that a Government Department may not be the most suitable body to run a certification system. It may tend to adopt too cautious an attitude and be concerned to give too definitive an opinion on innovations. However, the relationship between certificates and Building Regulations demands close association between the Ministry of Public Building and Works and the authority.

Building Research Station

41. The Building Research Station has the same disadvantage as the Ministry of Public Building and Works, in that it is part of a Government Department. It has the further disadvantage that it has no responsibility for Building Regulations. Its technical experience, on the other hand, makes it the most appropriate body to assist the authority in judging innovations.

British Standards Institution

42. The British Standards Instition, well versed in routine testing to detailed specifications, has very few facilities for the type of testing needed for a certificate. In any case it seems right that the body running the authority should be clearly identified with the improvement of building technology (though free of any sectional interest) and not, like the B.S.I., concerned with a wide range of interests outside the building field.

National Building Agency

43. The National Building Agency, though set up to encourage industrialised building, is by the nature of its task primarily concerned with building systems and, moreover, with systems of particular interest to its own clients. The authority, on the other hand, will probably have as its main task a miscellany of new materials and components in addition to building systems, and will have to make its assessments without relation to the needs of particular types of client.

An Independent Body

44. We considered whether the certification system might be administered by a group of the existing bodies most closely concerned. We think that this would prove far too cumbrous an arrangement and would lack the close control which would be possible with a single organisation. The establishment of an independent body is, of course, open to the objection that it increases still further the number of organisations with which the building and building materials industries have to deal. We are conscious of this, but on balance we consider its disadvantages less serious than those which would arise from

grafting the authority on to an existing body which was not ideally suited to receive it. The prime consideration is that those most closely concerned—manufacturers, on the one hand, and architects and their clients, on the other—should have confidence in the authority and from our discussions it is clear that an independent body is most likely to ensure this. A subsidiary but still important point is that manufacturers thought an independent authority, free from particular interests, most likely to secure recognition abroad and thus to aid exports of British building products.

The Authority Should Be Independent

45. We therefore recommend that the authority should be independent of any existing organisation but closely linked with the Minister of Public Building and Works in view of his responsibilities for building in general and for building regulations in particular. From the enquiries we have made it seems that its most suitable form would be a company limited by guarantee, the board of which would be appointed for the purpose by the Minister of Public Building and Works. It is important that those affected by the certification system should be closely identified with its operation. The Board should therefore be broadly, but not formally, representative of the main interests involved — manufacturers, contractors, operatives, architects, the British Standards Institution, local authorities (both as public clients and as building inspectors) and those concerned with the spread of information on building. It should be headed by an independent chairman and should include members from the Ministry of Public Building and Works, the Building Research Station and the National Building Agency — the three public bodies most concerned with the operation of the system.

The Importance of International Links

46. From the outset the authority should endeavour to secure acceptance of its work by other countries and seek membership of the European Union for Agrément. This would not only aid the export of British products but — equally important — would encourage the adoption here of the best Continental innovations.

Responsibility for Testing

47. Before defining any further the responsibilities of the authority it is convenient to set out our conclusions on testing, by which we mean the whole corpus of work described in paragraphs 26 to 32. We have already accepted the need for that work to be based on existing facilities. We recommend now that the responsibility for testing should be given to the Building Research Station acting as the agent of the authority. Our evidence indicates conclusively that it is the organisation best fitted for this work. It has the most comprehensive knowledge of building technology in the country. For a number of years it has conducted a series of Special Investigation Reports, which are in many ways the prototypes of the certificates we envisage, and has gained from them great experience of the organisation of tests for new developments and the assessment of the results. It has a nucleus of trained staff and much of the costly plant which comprehensive testing will require. In addition it is familiar with the facilities available at other testing stations. Most important, all sections of the industry have confidence in its work.

48. We envisage that the Building Research Station would assist the authority in preparing priorities and in formulating agreed programmes of work. Once a product or a class of products has been handed over to it, it would be in complete control of testing and assessment. It would carry out such tests and examinations as were needed, or would arrange for them to be carried out elsewhere in conditions which would ensure comparability of data. It would prepare a report and make recommendations to the authority.

49. A special consideration arises in the case of building systems, which the National Building Agency is also starting to appraise, beginning with those suitable for housing. These appraisals will, we understand, include assessments of points which would be outside the framework of a certificate as we conceive it. We have considered whether the authority should go direct to the National Building Agency for information on systems, but have concluded that, as systems, materials and components are closely interrelated, the Building Research Station should be responsible for advising the authority over the whole range of its work. We recommend that the Building Research Station should whenever possible make use of the National Building Agency's information on building systems. Both these bodies will play an important part in the planning and execution of the practical side of the authority's work. It is for this reason that we recommend their representation on the board of the authority.

Expansion of Testing Facilities

50. We foresee that the probable demand for testing will soon require the extension of testing facilities, both at tthe Building Research Station and, more particularly, at the Fire Research Station. From our own knowledge and from evidence submitted to us we are concerned that the additional requirements for fire testing which the scheme will generate may seriously overstrain the capacity at the Fire Research Station and cause a bottleneck in the authority's work. We hope that those responsible for the Joint Fire Research Organisation will bear this risk in mind and be ready to expand the Station's facilities at need.

Responsibilities of the Authority

(*i*) *The Board*

51. The main task of the board will be to determine the general policy of the authority and the priorities it should attach to various classes of innovation, and to supervise its general progress. The allocation of priorities will be a task of particular importance during the early stages of the authority's work. It is likely that there will initially be a far heavier demand for certificates than the authority will be able to cope with. The board will therefore be required to decide whether these applications relate to genuine innovations or to products which are already widely accepted and it will have to settle the order in which the general interest demands that classes of innovation should be studied by the authority.

52. So long as it is clear that the board is wholly responsible for the issue or refusal of certificates, we consider that the board should be left to decide

the extent to which individual decisions are taken by the board itself or by its officers under delegated authority.

(ii) The Staff

53. The staff of the authority will be required, first, to examine applications for certificates in conjunction with the Building Research Station and in accordance with the board's general priorities, and, second, to consider the reports from the Building Research Station and whether a certificate should be granted. It has been suggested to us by our assessor from the Building Research Station, and we have agreed, that the authority should have means available to it to review the Building Research Station's conclusions, particularly by drawing on any experience which the industry or the professions might have of the quality of an innovation and its practical implications. A possible method to achieve this would be to establish a panel of consultants from which an appropriate selection might be made to act as referees for each draft certificate.

FINANCE

Financial Independence should be the aim

54. We think it an important principle that as soon as possible the authority should support itself from fees paid by manufacturers seeking its approval. Although we recognise that the work of the authority will ultimately benefit the community as a whole, it will be of immediate financial advantage to the manufacturers who will receive its certificates and be able to attract business with them. It would be wrong, we believe, to subsidise from public funds an operation from which the successful applicant will draw financial benefit. If that is accepted, it would be equally wrong to subsidise manufacturers whose products fell short of what the authority thought a proper standard. We recommend, therefore, that as soon as the demand justifies it, the authority should charge an economic fee to all applicants.

55. It should be understood from the first that the authority is not to run a certification system on a shoestring budget. For many of the products submitted to it methods of test may have to be specially devised and may indeed call for modest research programmes. Once devised these methods may well need equipment which would not normally be found in commercial testing laboratories. The Building Research Station is already well stocked with a wide range of testing equipment, but more will undoubtedly have to be purchased as the scheme proceeds. As we have pointed out, the demand for the system may justify extensions to existing facilities, particularly at the Building Research Station and at the Fire Research Station. Without expenditure of this kind the authority will be unable to make a distinctive and valuable contribution to the advancement of building technology. The fees charged by the authority should include an appropriate element for this and other types of overhead expenditure.

56. We do not think that fees charged on this basis will deter manufacturers from using the scheme, although they may well discourage frivolous or premature applications. The work involved should not in many cases be

unduly costly. From the Building Research Station's experience most of the fees charged should be between £100 and £1,000, which no manufacturer should find frightening. For the most novel and elaborate items, of course, higher fees will be necessary, but we do not expect that they would be out of scale with the manufacturer's own development expenditure.

Need for an initial subsidy

57. What we have said relates, of course, to the time when there is a steady demand for the authority's services and a steady stream of fees. It would be rash to assume that this state of affairs will exist from the start. An initial grant will obviously be needed to set up the authority, and it may be that for a period its facilities will not be utilised to the full or that it will have to incur capital expenditure which can only be amortized over a period of years. It would be unreasonable to expect the first applicants to bear in their fees the cost of surplus capacity or an excessive share of capital expenditure. Nothing would with greater certainty chill the industry's enthusiasm for the scheme. We recommend, therefore, that for an initial period the Government should be prepared to underwrite any expenses of the authority which cannot reasonably be charged to its applicants. The length of this period will obviously depend on the success of the authority. Within three or at most five years it should, however, be clear whether the demand for the authority's services justifies its existence. At that point the Government grant should cease and the authority should either continue on a fully self-supporting basis or, in the unlikely event of failure, be wound up.

V. SUMMARY OF CONCLUSIONS

58. (i) A central authority should be established to make reliable and independent assessments of innovations in the building field in order to facilitate their acceptance by the building industry, the professions, their clients and local authorities (paragraph 19).

(ii) The authority should be independent of any existing organisations, but closely linked with the Ministry of Public Building and Works. It should take the form of a company limited by guarantee. Its board, broadly representative of the main interests involved, should be appointed by the Minister of Public Building and Works (paragraph 45).

(iii) The authority should concern itself only with new products, systems and techniques and with new uses of established ones (paragraph 20).

(iv) Manufacturers should not be compelled to apply for a certificate. In order to produce assessments promptly the authority should be free to limit itself to the types of product and technique which most merit study. Once it has certified an innovation of a particular type it should however be bound to consider other innovations of that type (paragraph 24).

(v) The authority should publish certificates for innovations which it considers satisfactory for general use. These certificates should include a detailed assessment of relevant characteristics, methods of application and so on. The authority should consider in how great detail it should publish information on manufacturing processes. No publicity should be given to failures (paragraphs 25-32).

(vi) The authority and the British Standards Institution should co-operate to ensure that the award of certificates to individual products leads naturally to the formulation of general British Standards (paragraph 35).

(vii) In many cases the general use of an innovation can only be facilitated if it is sanctioned by a "deemed to satisfy" clause of Building Regulations. In these circumstances a certificate and a "deemed to satisfy" clause should as far as possible be issued at the same time (paragraph 36).

(viii) The authority should seek acceptance of its work abroad, to aid the export of British products and to encourage the adoption here of the best Continental practices (paragraph 46).

(ix) Testing should be based on existing facilities expanded as necessary (paragraph 23). Responsibility for the formulation, execution and assessment of tests should be given to the Building Research Station, acting as the agent of the authority (paragraphs 47 and 48). In the case of building systems the Building Research Station should whenever possible draw on the National Building Agency's information (paragraph 49).

(x) The authority's board should determine the general policy of the authority and the priorities it should attach to various classes of innovation, and should supervise its general progress (paragraph 51). It should be left to decide how far it delegates responsibility for individual decisions to its officers (paragraph 52).

(xi) In considering whether to issue certificates the authority should review the Building Research Station's conclusions, particularly by drawing on outside experience of the quality of an innovation and its practical implications (paragraph 53).

(xii) In principle the authority should be self-supporting and should charge an economic fee for its services to all applicants (paragraph 54). These fees should include an appropriate contribution towards the cost of capital facilities, research programmes on methods of test and other types of overhead expenditure (paragraph 55).

(xiii) An initial grant from the Exchequer should be made to set up the authority and for an initial period the Government should be prepared to underwrite any expenses of the authority which cannot reasonably be charged to its applicants (paragraph 57).

Appendix A

BODIES SUBMITTING WRITTEN EVIDENCE TO THE COMMITTEE

PROFESSIONAL AND EDUCATIONAL BODIES

Architectural Association.
Association of Consulting Engineers.
District Surveyors' Association.
Heriot-Watt College.
Incorporated Association of Architects and Surveyors.
Institute of Builders.
Institute of Clerks of Works of Great Britain Incorporated.
Institution of Civil Engineers.
Institution of Electrical Engineers.
Institution of Municipal Engineers.
Institution of Municipal Engineers (Scottish Branch).
Institution of Structural Engineers.
Liverpool School of Architecture.
Modular Society Ltd.
Morter and Dobie.
Royal Incoporation of Architects in Scotland.
*Royal Institute of British Architects.
Royal Institution of Chartered Surveyors.
Scottish County City and Burgh Architects' Joint Association.
Slough College, Department of Building.
Captain G. R. Summers, A.M. Inst. B.E.
S. B. Tietz, Esq., B.Sc.Eng., A.M.I.C.E., A.M.I.Struct.E., M.Cons.E.
University of Newcastle-upon-Tyne, School of Architecture.
University of Sheffield, Department of Architecture.
John Warren, Esq., A.R.I.B.A.

PUBLIC AUTHORITIES

Association of County Councils in Scotland.
*Association of Municipal Corporations.
*British Standards Institution.
Consortium for Method Building.
Counties of Cities Association.
County Councils Association.
Convention of Royal Burghs.
Department of Education and Science.
Dock and Harbour Authorities' Association.
Forest Products Research Laboratory.
Gas Council.

PUBLIC AUTHORITIES—*continued*

London County Council.
Ministry of Health.
Ministry of Public Building and Works.
*National Building Agency.
Rural District Council's Association.
S.C.O.L.A. Consortium.
S.E.A.C. Consortium.
University Grants Committee.
Yorkshire Development Group.

BUILDERS AND CONTRACTORS, OPERATIVES AND DISTRIBUTORS

Civil Engineering Conciliation Board (Operatives' Side).
Electrical Contractors Association (Incorporated).
Heating and Domestic Engineers' Union.
D.L. and P. Luck, Ltd.
Metal Fixing Association for Building Insulation.
Modular Concrete Company Ltd.
National Association of Scaffolding Contractors.
National Federation of Builders' and Plumbers' Merchants.
*National Federation of Building Trades Employers.
National Inspection Council for Electrical Installation Contracting.

MANUFACTURERS AND INDUSTRIAL RESEARCH ASSOCIATIONS

Aluminium Federation.
Asbestos Cement Manufacturers' Association.
Associated Tank Manufacturers (1957).
Association of Boiler Setters, Chimney and Furnace Constructors.
Association of Bronze and Brass Founders.
Association of Constructional Floor Specialists.
British Ceramic Tile Council Ltd.
British Constructional Steelwork Association.
British Electrical and Allied Manufacturers' Association.
British Electrical Conduit Manufacturers.
British Iron and Steel Research Association.
British Lock and Latch Manufacturers' Association.
British Malleable Tube Fittings Association (1959).
British Plastics Federation.
British Precast Concrete Federation.
British Ready Mixed Concrete Association.
British Sanitary Fireclay Association.
British Steel Founders' Association.
British Wood Preserving Association.

MANUFACTURERS AND INDUSTRIAL RESEARCH ASSOCIATIONS—*continued*

British Woodwork Manufacturers' Association.
British Board Manufacturers' Association.
Building Engineer.
Cast Iron Heating Boiler and Radiator Manufacturers' Association Ltd.
Clay Block Association.
Copper Development Association.
Cork Tile Association.
Council of British Sanitary Pottery Manufacturers Ltd.
Dussek Bitumen and Taroleum Ltd.
Electric Lamp Industry Council Ltd.
Electric Light Fittings Association.
Eswa Ltd.
Federated Home Timber Association.
*Federation of British Industries.
Federation of British Rubber and Allied Manufacturers.
Federation of Building Block Manufacturers.
Fibre Building Board Development Organisation Ltd.
Fram Reinforced Concrete Company.
Glazed Cement Manufacturers' Association.
Gypsum Plasterboard Development Association.
Heating & Ventilating Research Association.
Linoleum Manufacturers' Association.
*National Council of Building Material Producers.
Prestressed Concrete Development Group.
Rubber and Plastics Research Association of Great Britain.
Society of Chemical Industry.
Structural Insulation Association.
Timber Research and Development Association.
Timber Trade Federation of the United Kingdom.
Zinc Development Association.

RESEARCH LABORATORIES

Ellis Research and Testing Laboratories Ltd.
Yarsley Research Laboratories Ltd.

* These bodies gave oral evidence

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